

THE
SUCCESSFUL TREATMENT
OF
INTERNAL ANEURISM,

Illustrated by Cases in Hospital and Private Practice.

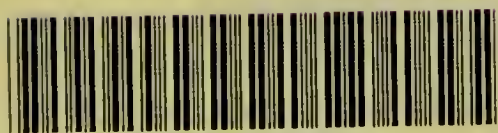
BY
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THE SUCCESSFUL TREATMENT
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THE treatment of external aneurism by compression elicited an important truth, viz. : that in order to cure this disease it is not necessary that there should be a complete arrest of the flow of blood through the sac ; but merely such a diminished current as shall be incapable of giving forcible distension to its walls. This fact, once established, the deduction but remained to be drawn that internal aneurisms might also be made amenable to treatment, and the views entertained by Valsalva be confirmed by practice.

Acting upon this reasoning the late Dr. Bellingham and myself undertook the treatment of a series of cases of thoracic and abdominal aneurism, adopting such a modification of Valsalva's method as we considered (after mature reflection) to be best calculated to bring about the desired object. The result was such as to induce us to place the greatest confidence in the efficiency of the plan. Dr. Bellingham unfortunately died before sufficient cases of recovery occurred to enable us to publish, with any feeling of authority, the fruits of our joint experience. Since Dr. Bellingham's decease, however, I have continued steadily to carry out this practice, and with a degree of success, such as I believe I may safely say, has been unprecedented under any other mode previously adopted. The result of that experience I purpose now publishing, and I trust that the cases which I shall adduce and the remarks which I shall subjoin, will be the means of inducing many to take the subject up ; for the mode of procedure is simple, and its efficiency soon put to the test. Other plans of curing internal aneurism

have lately been brought forward—one, by the introduction into the sac of a large coil of fine iron wire ; and the other by compressing the aorta ; but both of these must be very exceptional in their application, since but few cases of internal aneurism will be found suitable for the practice of either. The treatment by position, on the contrary, may be almost universally adopted, for no aggravation of the symptoms, no injury or risk of life, can by possibility be produced. The method which I here advocate is the imitation of nature's cure ; the production, artificially, of that consolidation which in isolated cases has, from time to time, spontaneously occurred. With this view I have in a succession of patients in hospital, under the eye of my colleagues, and in private practice, systematically adopted measures calculated to promote the lining of the sac of each aneurism with fibrine ; and I have succeeded, and arrested the disease. I have done so in cases apparently hopeless, (such as the subject of illustration of this paper), and I have enabled the individuals to resume their ordinary avocations, and pursue them for a number of years. These cases have, each of them, been kept under my own eye, or that of others, for such a length of time as to show that the improvement was not merely temporary, but of a permanent nature. I do not, in speaking thus dogmatically, of course, mean to affirm that all cases of aneurism are to be considered curable, or that the surgeon will always be successful in his efforts to bring about recovery : this I wish clearly to guard against. The advancement of such an idea as that all cases of aneurism are curable, would be going further than can be justified by fact ; but what I maintain is, that, in very many cases now considered hopeless, such a state can be brought about, and the means of accomplishing this end I purpose detailing in the following pages. There are, however, I should premise, two great essentials necessary for ultimate success, without which it is futile to make trial of this plan, viz., confidence on the part of both surgeon and patient. The latter must submit with determination to the restrictions placed upon him, and carry out, to the minutest detail, all the directions given. Without this be done, disappointment will assuredly ensue.

I have had more than one case where I feel confident the cure of the aneurism would have followed, had the patients continued steadily to submit to the restrictions imposed ; but finding relief from suffering previously endured, and not seeing any reason for

so rigidly adhering to the rules and regulations imposed, they discontinued abiding by my directions, resumed their ordinary modes of living, and consequently had recurrence of the symptoms in full.

Before speaking of the treatment to be adopted, and the cases fitted for it, I purpose adducing some of the instances in which the happy results mentioned were obtained. The majority of these were under the observation of my colleagues and the students of the hospital.

The first case to which I shall direct attention is that of a hackney carman, named Doyle, aged 35, who was admitted into the City of Dublin Hospital in 1851, for an aneurism of the abdominal aorta as large as an orange. He was placed under restricted diet and perfect rest in the horizontal position for three months, being allowed only 8 ounces of solid food and 6 ounces of fluid during the 24 hours. The tumor soon became partially solid, so that when grasped it imparted to the hand the idea of considerable density. The recumbent position was, however, maintained for the period stated. He was then allowed to leave his bed, and three weeks afterwards quitted the hospital, shortly subsequent to which he resumed his occupation. At the end of eighteen months I met him plying at a railway station, and hired him for the journey I was going upon. He told me that he had been "all right" ever since he left the hospital, and was perfectly able to do all his work, with the exception of lifting a bucket full of water, which he found great difficulty in effecting, from inability to straighten his back. He stated that he never felt any inconvenience from driving, excepting when the car got a jolt in passing over a crossing.

Three years afterwards (that is, four years and a-half from the time of being under treatment), I saw him again at his stand, and he told me that he had been driving uninterruptedly ever since. This man died subsequently from the effects of an accident.

The second case occurred in the person of a sailor, aged 39, who was admitted into the City of Dublin Hospital early in 1854, for a contusion of the foot. He was suffering also severely from bronchitis, and this led to the examination of his chest. He had cough and wheezing respiration, with hoarseness of voice, and dull aching pain in the left scapular region, with burning pain at night. There were occasional flying pains, but not severe. Upon percussion, a

dull sound was elicited at the seat of pain in the scapular region, and auscultation revealed a double thump, resembling the sound of the heart. He had been exposed to much hardship whilst working at the coal trade, and had drank hard. The symptoms referred to came on gradually, and progressively, during the six months preceding admission, having first shown themselves about a month after receiving a back fall in a wrestling match.

This man was treated, in the first place, by blisters applied over the front and back of the chest, opposite to the seat of pain; the posterior blister being kept open and dressed with the muriate of morphia for some time. Perfect rest and restricted diet were employed, and he left the hospital, relieved of every symptom, at the end of ten weeks. This man resumed his calling as a sailor, and did all his duties below and aloft.

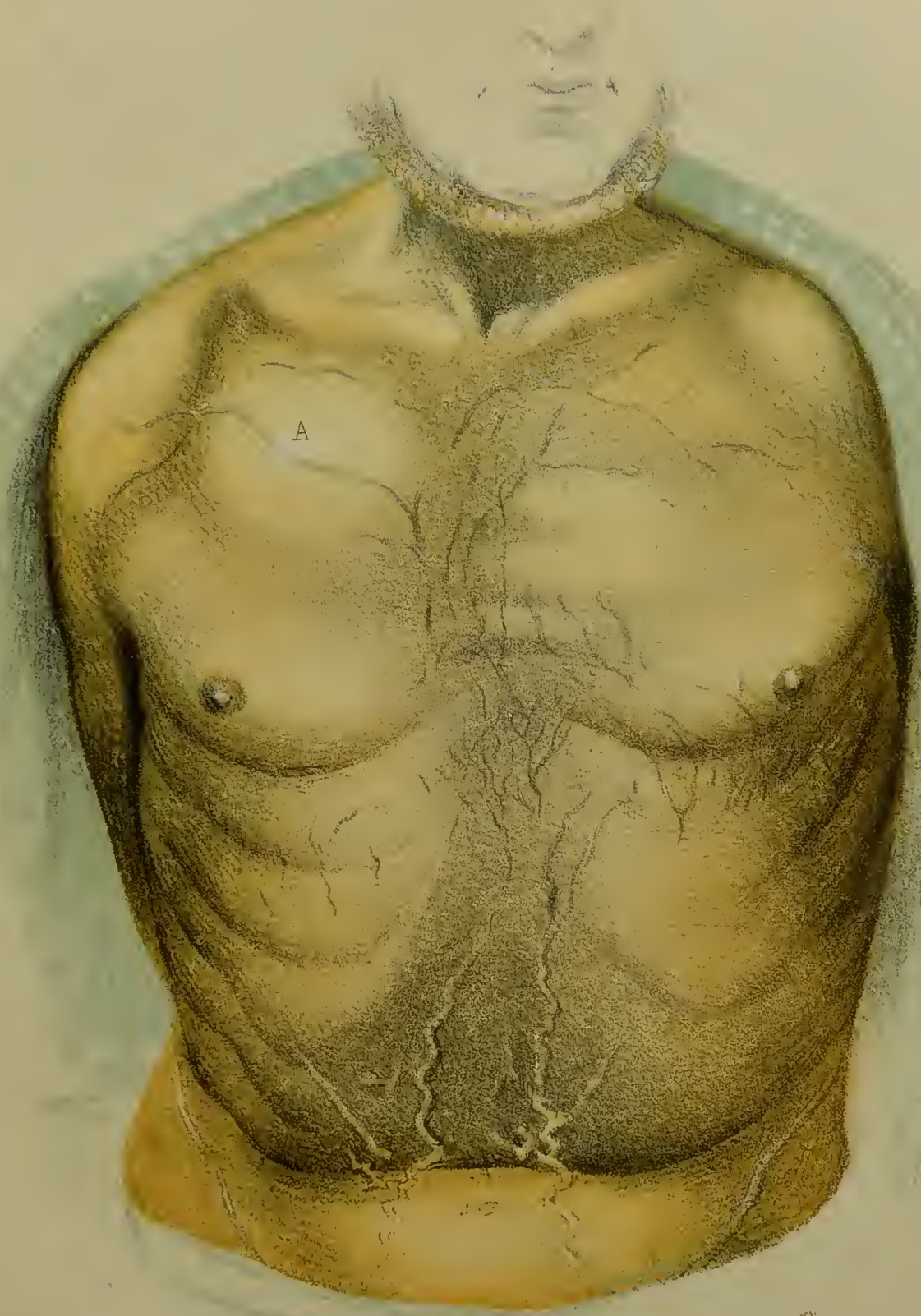
The third instance that I shall adduce is that of a die-cutter, named Parks, the subject of the illustration of this paper; a delicate looking man, aged 54, who was admitted into the City of Dublin Hospital on the 18th of September, 1854, with thoracic aneurism, the tumor being three inches in diameter, and considerably elevated above the surrounding skin. It was situated to the right side of the sternum, between the second and fifth ribs, and occupied the sites of the third and fourth, which, together with a portion of the sternum, had been absorbed. He stated that he had always been temperate and steady, but had worked very hard at his trade, that of die-cutting in steel. For some time back he had experienced a sense of heaviness in his chest; but about five weeks prior to admission, he, one night, upon taking a pill for constipation, let it pass into the trachea. He was seized with intense coughing, which lasted for an hour, and under which he fell exhausted. A few days afterwards he felt severe pain in the breast, shortly followed by the tumor. At the time of his admission he was exhibiting considerable cardiac distress.

He had tried to work on at his trade, but the pain was so excessive that he was obliged to relinquish it, and come into hospital for relief. His pulse was 88, full and regular, and equal at either wrist. The fingers when laid upon the tumor at its most projecting point, pressed against a soft cushiony, elastic, pulsating surface, giving to the touch the sensation of the integument only intervening between the observer and the blood contained in the

sae. There was a double pulsation sound when the ear was laid upon the tumor, but neither *bruit de soufflet* nor murmur of any kind. The aneurism evidently sprung from the anterior aspect of the right side of the ascending portion of the arch of the aorta, and was approaching rapidly towards the surface, absorbing all before it in its progress. The nature of the case was explained to him, and the treatment hereafter to be recommended was commenced upon the 19th of September, and continued steadily until the middle of November. At first he felt the loss of food considerably, and used to look anxiously at the other patients eating their meals, but he had the sense to restrain his appetite, and took nothing whatever but the regimen allowed. He suffered more from thirst than hunger, and complained a good deal of dryness of the throat and fauces at night, which, however, was somewhat relieved by keeping a pebble in his mouth. These annoyances soon became less and less, and upon the 25th of September the pulse had become reduced to 70, and was soft, whilst the pulsation and pain in the tumor had greatly diminished. Upon the night of the 26th, however, an untoward circumstance occurred, another patient, in a fit of maniacal delirium having rushed into the ward, and made for his bed, producing intense agitation and alarm. Port wine and opium were given to him, and confidence after a while was restored; but his heart's action became tumultuous, and remained so for some time, not regaining its steadiness of beat until the 28th. Ice was at the commencement applied to the tumor, but after a little while a thin piece of linen rag moistened with water was kept on as an evaporating medium instead. The tumor now began to be less prominent, and was described by the patient as feeling more condensed. The double thump gradually disappeared in the tumor, and a single beat only could be felt, corresponding to the natural sound of the heart, but slightly louder.

Upon the 2nd of October the pulse had fallen to 62. He could now lie flat upon his back for two hours at a time, which he could not upon first admission, being then obliged to rest more or less propped up. The tumor gradually became firmer and firmer, and flattened in the centre. Towards the middle of November his general health was excellent, and his bulk and weight had but very little declined. His diet was now slightly increased. He left the hospital upon the 13th of December for his home, where he promised to remain at rest for some time.

I did not see this patient again until December, 1857, when he called upon me to request my advice for an irritable ulcer of the leg. Upon questioning him, he said "that the aneurism never troubled him now," that he was quite well as regarded it, and had been regularly working at his trade as a die-cutter and steel engraver since March, 1855. When stripped, the first point that attracted notice was the enlargement and tortuous condition of the abdominal and pectoral cutaneous veins; the epigastrie, circumflex, and mammary having assumed the condition of large venous trunks, as illustrated in the portrait annexed, which has been reduced from a drawing of life-size taken by Mr. Connolly of Dublin. The tumor next engaged my attention. It projected to the right of the sternum, nearly midway between the clavicle and nipple, where it presented a bulging prominence the size of a small saucer, making this side contrast strongly with the hollow intercostal spaces and marked ribs upon the left. No pulsation was visible in the tumor, even when any testing object, such as a portion of white paper, was placed upon it. To the hand it felt dense, and the cardiac impulse against the interior of the sac was unheeded by the patient. The sound on percussion was dull over a very large space around the heart, whilst to the ear a double sound was given intermediate in time to the contractions of the heart. Upon deep inspiration this portion of the chest did not expand. The heart's sounds were audible over a very large portion of the chest, and the pulsation, aneurismal and cardiac, was communicated to the hand or ear for a space of fourteen inches in an oblique line from the right clavicle down to the left hypogastric region. His general appearance indicated a barrier to the return of blood to the right side of the heart. There was some congestion of the face, which was increased on stooping, with puffiness of the neck to a slight degree. There was no interference by pressure upon the trachea, nor œsophagus. He had some slight cough and expectoration, and occasionally after coughing felt pain in the tumor, but not at any other time. There was no interference with either the carotid or radial pulses, and the circulation was equal upon both sides. He stated that he lay at night upon the right side to sleep, and could not upon the other. He had been regularly working at his trade, and one of his most recent acts had been the cutting of a new seal for the College of Surgeons in Ireland; and it is a point of interest



Day & Son, Litho to the Queen.

Case of Samuel Parks A: '56

A. ANEURISMAL TUMOR PRESENTING TO THE RIGHT OF THE STERNUM,
THE RIBS HAVING BEEN ABSORBED.

in connection with this case to consider, that from his hand the diploma has issued which now stamps the diploma of the Dublin College of Surgeons.

The fourth case which I shall adduce is that of a gentleman from Australia, a powerfully-built and well-made man, 44 years of age, who consulted me for "a beating in his belly." He stated that he had gone out to Australia some years before, where he had toiled very hard at the diggings, and having made a considerable sum by actual labour, sold his prospect, and came home, finding himself, as he expressed it, getting stale, and incapable of work from rheumatism and lumbago. This stiffness he said had been coming on him gradually for a year before he left the diggings, but its first occurrence was consequent upon the lifting of a heavy piece of quartz. The "beating of the belly" he first observed whilst on board ship, upon the passage home, a short distance from England, and stated that he discovered it upon going to the watercloset the day succeeding to an evening upon which he had danced a reel, during which he had made great and continuous exertions. He showed this "beating" to the surgeon of the ship, who told him that its nature was most serious, and recommended him to come to Dublin and place himself under my care, which he did immediately upon the vessel reaching land. He had suffered intense pain of intermittent character, and I found him in great alarm, with that general tremor and distress that indicates so often cardiac disease; but upon the closest examination I could not detect any affection of the heart, and I believe it to have been caused solely by the fear of sudden death. His habits on board ship had the whole voyage (at least up to the occurrence of the tumor) been those of perfect indolence, eating and drinking to satiety up to ten days before, so that he was grossly fat, and the dyspnoea which he had upon exertion, I attributed in a great measure to obesity alone. The walls of the abdomen were one mass of fat; through these, however, I could discover the "beating." It was an aneurism of the abdominal aorta at the level of the umbilicus, certainly five inches in length, if not more, and of corresponding breadth, forming a globular sac. The impulse was powerfully strong, the aneurism apparently springing entirely from the front of the artery at the lower portion of the vessel, just above the bifurcation.

I asked him whether the tumor had enlarged rapidly, and he

said that he had so dreaded to touch it that he had not examined it at all, but he thought that from the pain which he suffered it must be increasing in size. When laid upon his back with the legs well drawn up, and the abdominal parietes relaxed, a loud bellows murmur was audible by the stethoscope and ear. The pulsation was single. In the erect position the *bruit* could still be heard, but much less loudly than when recumbent. The bowels were confined, for he had been afraid to go to stool lest the "beating" should burst, and in spite of the advice of the surgeon to keep the bowels lax, he had avoided encouraging their action.

The feature of interest which struck me particularly in this case was the existence of an aneurism of this size in a person so fat, arguing that its dimensions must have very recently expanded, and that, if its existence was a consequence of the accident at the diggings, its presence could have caused a mere rheumatic aching, and not in any way have interrupted digestion or the general health. The tissues forming the walls of the sac were circumscribed and perfect.

I explained to this gentleman the nature of the case, and the rest and regimen that he must maintain. There was no reason, however, for enforcing obedience, as he was willing to undergo anything that would hold out a hope of averting death. I need not specify treatment, but say that within three weeks the outline of the tumor could be felt, *with a pulsation within*, marking the fact that there had already formed a solid lining to the sac. This deposit gradually increased, and in five weeks, or a little more, had become dense. The recumbent position, however, was maintained for thirteen weeks. The bellows murmur became gradually more and more soft, and the pulsations less distinct. At the end of the period named, this gentleman sat up in bed, and then gradually moved about, but for a long time he would not trust himself to do more than creep across the room. By degrees, however, he gained confidence in his powers, but fearing a relapse, remained for some time in England, and afterwards sailed for Melbourne, and when I last heard of him was perfectly well, that is to say, free from pain and in the enjoyment of life.

The next case that I shall detail is one of abdominal aneurism, occurring in a gentleman thirty years of age, whose history is as follows:—Captain —— first consulted Mr. Solly on the 16th of

October, 1855, for severe pain in the epigastric region, and when visited by him, was found in a state of intense agony and exhaustion. He was thin, with a hectic flush, and sallow and worn by suffering.

He stated that four and a-half years before, when hunting, and riding a horse that rushed at his fences, he one day experienced, in taking a down leap, a sudden and severe pain in the abdomen, and from that instant he never afterwards felt really strong. He seemed to have been impressed with the feeling of some serious mischief having occurred; but still, for a period of two years, he did not experience more than slight aching pain in the back. He felt an increase of this uneasiness at times, but it was not constant, and it was only six months prior to calling in Mr. Solly that the pain became frequent and severe. He had consulted several physicians, who pronounced the case as "spinal," and treated it accordingly. Subsequently he had nausea and vomiting after meals. On examining the abdomen, a distinct pulsating tumor, situated about the bifurcation of the aorta, was discernible, the pulsation being lateral as well as from behind, and accompanied by *bruit de soufflet*. The bowels were at this time confined, and the discharges when passed, solid, lumpy, and hard.

Upon the 11th of January, 1856, I met Mr. Solly in London, in consultation upon this case. The abdominal tumor now measured four inches in length by two and a-half inches in width. It was of an oval form, and pulsated strongly in all directions, the blood entering with a whirring, whistling sound. There was no pulsation whatever in the right iliac, or femoral artery at the groin, though there was a slight pulsation at the site of the saphenic opening in the thigh. I had not the slightest hesitation in pronouncing it to be an aneurism of the abdominal aorta, and recommended the restricted diet and treatment, as detailed in this paper, with perfect rest in the recumbent position for three months.

This plan was steadily carried out for nine weeks, at the end of which time the pulsation was less, the *bruit* not so sharp, and the patient able to rest well without opiates at night. He now removed to the sea coast, and bore the journey well, and upon the 25th of May, the surgeon under whose care he was placed, writes as follows:—"You will be pleased to hear that Captain —— is progressing favourably, and that nature is performing a cure which no

operation could have done." Upon the 29th of May, he again writes:—"I yesterday made a most careful examination of ——. The result is as follows. As to the aneurism, I can scarcely detect any pulsation below the umbilicus; I have strenuously advised the most rigid adherence to your directions as to diet, quiet, &c." During his stay at the sea, he had occasional paroxysms of pain, but none of severe character until the 9th of July, when Mr. Solly was summoned to see him, and found him writhing in agony. It appears that he had been pressed by a friend to accompany him upon a cruise in his yacht; that whilst keeping quietly on board he got on very well; but having landed, he walked up from the vessel for half a mile upon a shingly beach, and was immediately attacked by pain in the tumor.

Chloroform inhalation, with opium injections, having failed to give relief, he was ordered to be bled to six ounces, treatment which had proved useful in relieving the pain before. He bore the bleeding well, no feeling of faintness followed, the pulse became softer, and he was decidedly relieved. The blood the next morning exhibited a firm coagulum, and was cupped and buffed. Sickness now set in, with constipation; he was ordered therefore a strong aperient injection, and a blister to the front of the abdomen, to be afterwards dressed with morphia. From this attack he gradually recovered, and upon the 5th of September was free from pain or inconvenience of any kind.

Upon the 11th of January, 1858, being in Ireland, he called upon me, to show himself as perfectly restored. He said that he rode regularly on horseback, and had driven a drag for fifty miles at a stretch, that the only thing that annoyed him was heartburn, which he had daily after breakfast. It did not, however, come on after dinner.

I carefully examined the abdomen, and found a *hard* pulsating tumor, measuring three inches vertically, and four inches from side to side, situated equidistant above the umbilicus, a *soft bruit de soufflet* being audible below the navel, a single thump above. The *bruit de soufflet* extended throughout the left iliac artery, and the circulation was perfect in the left extremity. Upon the right side there was no pulsation in the iliac, femoral, or tibial vessels. The heart's action was regular, and pulse natural at 74. I congratulated him upon his recovery, but cautioned him strongly against hunting

or taking violent exercise of any kind that might put the aorta suddenly upon the stretch,—telling him that the aneurismal sac, though strengthened by fibrine, was not elastic, and would not bear a strain. Captain —— smiled, and said, “Why I have never had any aneurism at all, and I merely called to-day to hear what you would say. I have consulted two of the most eminent surgeons in Dublin, and they both tell me that I may hunt and shoot, and do as I like.” I inquired what opinions they had relatively expressed as to the nature of his disease, and he replied, “C. said, ‘Pooh, pooh, nonsense—aneurisms don’t get well in that way;’ and R. told me that the pain which I suffered from ‘was the passing of a small stone from my kidney into the bladder.’”

I repeated my injunctions in a firm but quiet manner. I told Captain —— that if he wished to prolong his life he had better follow my advice, and reject theirs. He bowed, and our interview ended. He did not, of course, do as I bid him, but commenced hunting, driving four-in-hand, and yachting, and continued to take violent exercise of every kind until August, 1859, when he died suddenly, from the bursting of the aneurism, at Cowes.

Dr. Hoffmeister, who was called in to attend him, made an examination of the body, and thus reports to Mr. Solly:—“The cause of Captain ——’s death was the bursting of an aneurism of the abdominal aorta, immediately above its bifurcation, nearly four inches in length, and between two and three in breadth, the rupture taking place by a small opening at the back part of the aneurism, a little to the inner side, and just above the origin of the left iliac artery. The coats of the aneurism, at the lower part, were plated with ossific and fibrinous deposits. The vertebræ were not diseased; the cellular tissue behind the viscera was very extensively infiltrated with coagulated blood.”

I have detailed this case at unusual length, because I regard it as one of great importance in reference to the influence of the treatment here recommended, for I feel assured that had death occurred from any cause in which a *post-mortem* examination had not followed, the fact of Captain —— having had aneurism would have been stoutly denied.

The last case that I shall bring forward is that of a man who has recently been under my care in the City of Dublin Hospital. The patient, a labouring man, aged 30, tall and well made, but very

sallow, was admitted into the Herbert Ward upon the 14th of March of the present year, with an aneurism of the abdominal aorta, of the size of an ordinary apple, situated below and to the left of the xiphoid cartilage of the sternum. The history given by the sufferer is, that he had always been accustomed to heavy work, and, for some years, to drink hard also, but not latterly. That towards the end of June, 1863, he was employed in a stooping position, pitching up pipeclay from the hold of a ship, each lump of clay weighing 44 lbs. Whilst doing so he experienced pain in his back, but as he was working at this time a good deal in the wet, he fancied that it might be rheumatic. He had, however, to discontinue his labour, and rest for a day or two; he then resumed it, and was employed at unloading iron. Shortly after he was attacked by seminal emissions, which occurred very frequently. His whole system became irritable and restless, and he could not sleep at night; whilst the pain in the back grew so severe that he had to give up work altogether.

In January, 1864, he experienced a rigor, and immediately afterwards noticed a "beating in his belly." This abdominal pulsation gradually increased until his admission into hospital, when it was clearly visible to the eye, presenting to the left of the mesial line, inclining to the cartilages of the ribs upon the same side. Its impulse was considerable, and accompanied by a *bruit de soufflet* which, as usual, was plainly audible to the ear when he lay recumbent, but was lost upon his standing erect.

The heart and its valves were sound, and no thoracic aneurism was to be detected; but a second tumor, apparently pancreatic, could be distinctly made out in the abdomen, a little below the aneurism proper. The pulse was, after exercise, when standing, 104, and in the sitting position, 84. After rest it was, in the standing position, 96, sitting, 80, but lying down, only 66—the difference between lying and standing being 30 beats per minute. The dorsal pain was very great, and the pulsation of the tumor so considerable as to be visible at the far end of the ward. Treatment was commenced upon the 23rd of March. Upon the 4th of April the pain had so subsided as to be scarcely complained of, and upon the 3rd of July, when he left the hospital, his condition was as follows:—His weight was 10st. 3lbs., or $1\frac{1}{2}$ lbs. heavier than before commencing the treatment upon the 23rd of March, when he turned

the scale at 10st. 11lb. He had returned to his ordinary diet about three weeks before, after living upon the reduced scale, as prescribed, for eleven weeks. He looked well, and had entirely lost the sallow, tallowy appearance. His bowels acted daily without medicine. He stood perfectly erect and at his ease. He slept well, and had no pain of any kind; but stated that, after sitting for some time with his body bent forward, he would experience a sensation of uneasiness along the spine. This entirely passed off after standing up for a little while. Upon the 20th of August he called, according to directions, to report himself. He stated that he had walked to Merriam and back that morning, a distance of four miles, before breakfast, without feeling tired or pain. The abdomen, when standing erect, presented a natural appearance—the recti muscles were well marked, the *lineæ transversæ* distinct, and no pulsation visible to the eye. When lying, with the parities of the abdomen relaxed, a pulsating tumor could be felt, with its outline hard and well defined, to which handling and pressure gave no pain, whilst the *bruit* could scarcely be heard. Upon the 3rd of September this patient left for London, where he had the expectation of obtaining employment in a gas work.*

Such are some of the cases that have come under my observation, and such the results of the treatment which I would here recommend. I can speak most confidently of its success, and would urge its employment by others.

To be successful, however, our measures must be adopted in fit and proper time; and I propose, therefore, before referring to treatment, speaking shortly of those symptoms which characterize

* This man had, in the first instance, been a patient of the Canal-street Dispensary, and I subjoin a letter from Dr. Labatt, the medical officer of that Institution, in reference to this case, he having, at my desire, called to show himself to Dr. Labatt:—

“1, Fitzwilliam-street, Upper, August 16th, 1864.

“DEAR MR. TUFNELL—I have a perfect recollection of the occasion (now some months ago), that I saw the man alluded to in your note. I made a careful examination of his case, which presented all the characteristics of aortic aneurism. The disease appeared to me to be in the neighbourhood of the *cæliac axis*, which it probably involved. I subsequently sent the man to Sir Patrick Dun’s Hospital, where I had the satisfaction to learn my views coincided with those of Dr. Law, under whose care he was admitted to that institution.

“I had the opportunity to see Hynes a few days back, and was much gratified to observe the good effects of your treatment. The tumor is considerably diminished in size, more firm, and the pulsation more feeble. That you have stayed the disease in this poor man, there cannot be a question.—Yours faithfully,

“H. LABATT.”

and pertain to thoracic and abdominal aneurisms in their earlier stages, whilst situated wholly within, and before they exhibit any tumor presenting externally, or such as can be recognised by the eye; for we not unfrequently find an aneurism of the arch of the aorta springing from the central and posterior portion, pressing upon both trachea and œsophagus, which eventually kills without presenting any tumor discoverable during life, but which if taken in time, might very possibly have been effectually overcome by filling up the sac with fibrine. So also when an aneurism of the aorta arises above the origin of the celiac artery. here bound down by the crura of the diaphragm, it may be of considerable size without any pulsation being perceptible. It is in these necessarily obscure and hidden cases that judgment of the highest order is required to substantiate or ignore the disease.

It is, I repeat, in the earlier stages of aneurism that we can expect the fullest and happiest results from treatment; and it is in these that the symptoms are so equivocal that we must consider well the whole of the phenomena consequent upon the development of this disease, and by analysis and deduction endeavour to form a correct judgment.

We must call to our aid each symptom. and take into consideration every little fact, however distant and remote, that, combined with others of more generally recognised and direct character, may tend to confirm or dissipate our conclusions as to the case in question being one of aneurismal tumor.

This differential diagnosis, as it has been termed, of the lesions of the various parts in the mediastina and abdomen, is the main point for attention, for upon the correctness of the diagnosis must the sequel depend. The difficulties attendant upon the diagnosis of internal aneurism are very great even at the present time, when the stethoscope and pathological investigation have contributed their powerful aid; but how much more so was it a few years back, when no such assistance was to be gained? It is to me, therefore, a matter of pleasure and satisfaction to be associated as a colleague with that physician, who first called the attention of the profession to the true diagnosis of this disease. The distinguishing symptoms of abdominal aneurism were first illustrated and explained by my colleague, Dr. Thomas Beatty, and detailed by him in the fifth volume of the Dublin Hospital Reports. To the record of that

case I would specially direct attention, for from it our cognisance of this disease may be truly said to have had its origin.*

Now, in undertaking the treatment of an aneurism of any kind, the surgeon must look upon it as a personal contest between himself and the disease, and a contest that will be fatal to the patient if he loses. There is no other view to be taken, for an aneurism, when once commenced, has a continued tendency to progress; its enlargement at first being to the detriment, and ultimately to the destruction of life. Under the influence of pressure from within, the adjacent structures (with the exception of fibro-cartilage) all succumb. Bone yields and vanishes under erosive absorption. Nerve tissue becomes teased out by tension, and the functions proper to it cease to be discharged. Mucous surfaces give way to ulceration, and serous membranes to laceration, whilst the tegumentary covering of the body, under the agency of pressure, dies equally, and forms a slough, which ultimately opens, and the aneurism bursts either by a small aperture or a rent-like laceration, death eventually ensuing upon both. Life, it is true, may be terminated in other ways, such, for instance, as by exhaustion from continued cough, so unceasing as to prevent sleep (and thus wear out the patient); or, more shortly, by exciting paroxysms of dyspnoea terrible to suffer. It may be by one means or the other—by a sudden or a lingering mode that life is brought to a close; but, in each case, death will inevitably ensue if the aneurism is not met by art and retarded.

To be of use, then, our treatment must be had recourse to ere the pressure of the tumor shall have inflicted irreparable injury upon the structures in its vicinity, for cure will come too late, if when the aneurism is consolidated the air tubes shall be destroyed by erosion.

The symptoms, then, attendant upon internal aneurism, which will be more or less present according to the development of the tumor, we may practically consider in reference to the regions they affect. We may place the head, face, neck, thorax, abdomen, and back in consecutive order, as parts of the body to be separately examined in the first instance, and the upper and lower extremities in the next; for, by thus doing in a regular and systematic manner,

* And here I would conjoin the name of another colleague, conspicuous for his accurate knowledge and diagnosis of cardiac disease, who witnessed the progress of these cases—Dr. Benson, Professor of the Practice of Medicine in the Royal College of Surgeons in Ireland.

we shall allow few points bearing upon the affection to escape us. When examining for aneurism, however, we should always bear in mind the possibility of the thoracic and abdominal portions of the aorta being both simultaneously diseased, and two tumors co-existing, and therefore not rest satisfied and conclude our investigation of the case upon the discovery of a single aneurism.

Firstly, then, as regards head symptoms, we have cerebral torpor, pain, and confusion of ideas, occasional giddiness, with consciousness sometimes all but lost. In the face, we find the conjunctiva sometimes suffused, whilst, in other instances, the countenance will be of a tallowy colour, more or less swollen, with the lips sometimes even livid. The veins of the neck, too, in some cases, present symptoms of tumefaction from implication of the descending cava and innominate veins, either by the aneurismal tumors being adherent to these vessels, or pressing upon them, thus narrowing the channel, and preventing the return of the venous blood to the heart. Contraction of the pupil of one or both eyes from pressure on the cervical sympathetic, as pointed out by Dr. Reid, is an additional symptom to be noted, and the evidences of which are visible, to the eye of an observer, in the eye of the patient.

Raucous voice and aphonia, too, both become valuable aids in diagnosis. The first of these we find in cases where the aneurism presses upon the trachea at its bifurcation, the indentation in the trachea producing this alteration in the tone of the voice; whilst aphonia we learn, by the experience of *post-mortem* observation, to be dependent upon the influence exercised by the tumor in pressing upon the recurrent laryngeal nerve, the pneumogastric being sometimes spread out into a kind of cellular web where the recurrent is given off. Stridulous breathing must be regarded in its separate and special bearing. Thus, in one case the stridor will be dependent upon a cause that is above, or laryngeal; and in another, where the obstruction is tracheal, and situated below. When the breathing is stridulous only, unaccompanied by aphonia, and when dysphagia is absent, we may then conclude that the tumor lies to the right of the trachea, pressing upon it and diminishing its calibre, but not implicating the œsophagus or recurrent nerve.

Thus, by the aid of ordinary hearing, we are enabled to form an opinion as to the causes productive of these various sounds, and to estimate at their real value the relative symptoms of stridulous

breathing, form of voice, and character of cough, and from these the site and nature of the tumor. Dyspnœa, too, is a valuable sign, but it must ever be taken into consideration in connection with this fact, namely, that dyspnœa is increased in exact proportion to the relative degree of irritability of the air-passages present in each individual case.

Thus much may we learn from the conditions of the head, neck, face, and voice.

In the chest we have the feelings of the patient to assist us, with the adjuvants of auscultation and percussion; auscultation pointing out the relative state of the respiration upon the corresponding sides of the chest, with the absence or presence of *bruit*; and percussion demonstrating the amount of dulness, if any; which latter, when existing, with absence of respiration at the same spot, is a symptom that should always be most carefully regarded. In the chest we have, however, often a serious obstacle to contend with in the form of bronchitis of chronic character, sometimes affecting one lung, but not unfrequently both, interfering considerably with auscultation, and masking the real disease.

With reference to *bruit de soufflet*, whilst its presence may be depending upon other causes than aneurism, its absence is no proof of the non-existence of the disease, for there is frequently no *bruit* whatever, although there may be an aneurism of large dimensions; whilst a largely dilated state of the aorta without saccular development, may be productive of bellows murmur; and if, as occasionally (though rarely) happens, a ring of bone should encircle the commencement of the aorta, a sound which has been described as the trumpet *bruit*,* will be loudly and distinctly heard.

The form of the opening influences the kind of *bruit* much more than the size. Thus, in cases where the communication between the aorta and the aneurismal sac is very large (such as two inches in length), the *bruit* is often less distinct than where the aperture is only just sufficiently large to admit the forefinger of an adult, but perfectly circular and round. The form of *soufflet*, when it exists in connection with aneurism, may be considered then to depend upon the nature of the opening; thus a smoothly-round opening is found to give a soft blowing sound, whilst a rough and irregular aperture is accompanied by a very rough *soufflet*. *Bruit*, too, may

* By Dr. Corrigan.

occur in connection with aneurism, yet so existing as to be mistaken for the *soufflet* depending upon valvular disease. Thus aneurism of the heart itself, emanating from the vicinity of the left auriculo-ventricular opening, and pressing forwards, may cause symptoms common to the narrowing of the left auriculo-ventricular opening, and from the far greater frequency of the latter affection the *bruit* and *fremissement*, which are really dependent upon aneurism, may be mistaken for that of valvular disease. *Soufflet*, then, taken *per se*, is not a symptom of diagnostic value as great as when it occurs in combination with other abnormal conditions of the thoracic cavity: such as undue pulsation, dyspnoea at intervals, oppression of the precordial region, with difficulty of swallowing solid food. These, in combination with *bruit*, point to the true nature of the disease. Of every symptom, however, there is none so peculiar to the disease as pulsation. Now, when this occurs to a considerable extent, when the pulsation of the heart is very distinct (the organ itself not being enlarged), it may be owing to the aneurism springing from the aorta about the junction of the thoracic and abdominal portions, the aneurism projecting forward the heart itself. Again, when the pulsation is distinctly felt in the anterior and posterior surfaces of the chest at the same time, the possibility is suggested of two aneurisms co-existing. With reference to pulsation, however, it is true that pulsating cancer of the lung may be taken for aneurism of the aorta in the ascending or descending portions of its arch; but the progress of cancer is so much more rapid than that of aneurism, that in a short time its true nature will become manifest, in addition to the other general symptoms which characterize malignant disease.

In cases of abdominal pulsation we have to consider the possibility of the tumor being other than aneurismal, and we may find tumors receiving pulsation from the aorta behind to be dependent upon various causes; thus scirrhus of the mesentery, scrofulous disease of the mesenteric glands, or collections of hardened faeces in the pouches of the colon, may exist; but here, in all these cases, the absence of lateral dilatation will assist us materially in forming our diagnosis. There is one point, however, that cannot be too strongly commented upon or borne in mind, and that is, that all the stethoscopic phenomena of aneurism that accompany aneurism of aorta, such as *bruit de soufflet*, stridor and dysphagia, do at times intermit, and, for a while, subside.

We cannot account for this state of things in any other way than by regarding it as the result of temporary diminution of the diastolic condition of the aneurism, and consequent diminution of pressure upon the part implicated, from reduction of the heart's action; certain it is, however, that the case is so, and we must keep the knowledge of this fact always in remembrance.

In the abdomen we have the same variety of assistance that we bring to our aid in examining the chest, with the addition of manipulation. Here the obesity of the individual, in some cases, greatly obstructs tactile examination, and renders the task of deciding as to the nature and cause of abdominal pulsations a far different matter from what it is in a thin person; but, to a certain extent, after the employment of purgatives and temporary low diet, the use of medicines to correct flatulence, assisted by gentle friction to the abdomen, and an easy, recumbent position, with the walls of the belly rendered lax, we may, in almost every case, be permitted to make such an examination of the tumor as will enable us to draw a correct conclusion as to its nature.

The influence of inspiration upon pulsating tumors of the abdomen* is of importance in forming a diagnosis; thus upon a cancerous tumor inspiration exerts its influence, whilst in aneurism of the aorta it has no effect. Should the mesenteric artery, however, happen to be the seat of this disease, then respiratory motion might affect it; but in no other aneurism would such be the result, and aneurism of the mesentery is very very rare.

And here it may be mentioned that, in the diagnosis of abdominal tumors, with pulsation, the rules laid down by Dr. Ablan should always be borne in mind, viz., that aneurism originates gradually, and the pulsations increase in strength by degrees, whilst other abdominal pulsations begin suddenly, and are most violent in their early stage, abating after they have lasted for some time. *Bruit*, too, in this region much more frequently accompanies aneurism than when the thoracic aorta is the seat of disease; this adjunct to diagnosis being often present when the patient is recumbent, and absent when the individual stands erect, from the difference of the tension by gravitation of the blood upon the walls of the sac obliterating the sound, or rather preventing its being produced. The stools, too, in abdominal aneurism, as if from sympathetic irritation,

* As noted by Dr. Henry Kennedy.

or a desire to expel something abnormally present, will occasionally be involuntarily discharged. The extent of the tumor in the abdomen is not always commensurate with the disease, but depends upon the nature of each special case. Thus the aorta need not be much, if at all, elevated from the spine for extreme pain, almost anguish, to be present; as, when the aneurism springs from the posterior wall of the vessel, and the cavity for the blood, though small, is formed in the bodies of the vertebræ, which have become absorbed before its pressure. This fact leads to the consideration of another most constant and valuable symptom, both in thoracic and abdominal aneurism, and that is pain; which feeling varies from the slightest aching to the intensest agony that can be conceived.

In all cases, then, of aching pain in the back and loins (of any kind), we should examine carefully with the stethoscope; for a case of aching in the lumbar region, that might be regarded as arising from lumbago; or of fulness in the loins, with pain passing down the thigh, which might easily be mistaken for lumbar abscess, will be diagnosed at once as aneurism, should *bruit de soufflet* be heard, and thus point to the real nature of the case.

In aneurism of the abdominal aorta pressing upon and eroding the vertebræ, in addition to the boring and burning pain which it universally produces, there is, in some cases, an aching extending from the loin to the knee, with an occasional darting pain exactly resembling sciatica; and, in other instances, numbness and want of motion in the lower extremity. In these cases it will be found that the erosion of the bodies of the vertebræ has extended to the points at which the nerves pass out from the spinal canal, and further when there is pain of intensity in degree extending down from the seat of disease in the back to the groin and along the spine, this is an indication of infiltration of the tissues behind the peritoneum, and into the psoas muscle with blood.

With reference to pain, we may, then, as a general rule, couple the amount of pain in the back, and elsewhere, with the progress of the aneurism upon the bony and nervous structures of the spine, though it is by no means necessary that the bodies of the vertebræ shall be eroded.

For symptoms connected with the extremities we shall, in the arm, find varieties in the circulation and pulse at the wrist. It may differ as to volume or force; it may intermit where the heart is

affected, or be altogether wanting. It may be absent at the wrist, in one case, from pressure upon the subclavian artery at its origin, and in another, from the cylinder of the artery being plugged by a portion of fibrine extending into it from the cavity of the aneurism. Where the artery at its origin is imbedded in the sac, this pedicle will sometimes completely fill the artery, passing into it for several inches. This implication of the trunks, given off from the aorta, necessarily influences the circulation through the branches below, and an absence of pulsation in the right radial artery of the wrist may lead us to infer that the innominate artery is more or less pressed upon and engaged.

Aneurism of the aorta, however, at or near its origin, may exist to a considerable extent without implicating the pulse at the wrist, which may be good and equal at either side, when the ascending portion of the aorta, between the heart and the origin of the vessel given off from the arch, is affected.

In the lower extremities there will occasionally be absence of pulsation in the femoral and its branches, whilst pain, of sciatic character, will shoot through the limbs, occasioned by the pressure of the aneurism upon the origin of the spinal nerves; these, when present, assist in pointing out the true nature of the affection. Numbness of the fingers and toes, too (especially when exposed to cold), are further indications of the disease. Indeed, a general coldness of the whole body is also not an unfrequent attendant, arising as if from an interference with nervous influence, and the generation of animal heat.

Such are the principal symptoms which are characteristic of the presence of internal aneurism; still, in determining the presence of organic disease, we must always bear in mind the possibility of all the symptoms present being dependent upon affections of the general system, such as anæmia or hypochondriasis. The presence, too, of hysteria, with other nervous symptoms, should be looked for, as it is especially in individuals so affected that abdominal pulsations are so frequent. The increased or decreased force and volume of the pulse, as well as its irregularity or intermittence, may also be the normal or constitutional condition of the circulation of the patient.

With reference to the cause of aneurism of the aorta, we find it to be very frequently referred by the patient to some sudden injury,

indeed, so commonly so as to make it impossible but to connect the immediate occurrence of the disease with the violence complained of. Still, it is hard to conceive the occurrence of a purely *traumatic* aneurism of the abdominal or thoracic aorta, when we take into consideration the coverings of this vessel, and the protection from direct violence which is afforded by the surrounding parts in these situations, as well as the elasticity of the artery itself, which, when in a state of health, must be sufficient to allow of the vessel accommodating itself to any motion to which the spinal column could by possibility be subjected. Indeed, as a counter-proof, we find that aneurism does not occur unduly amongst acrobats and posture masters, men whose spines are so frequently and so suddenly distorted.

To take, then, a correct view of the case, we must, I think, be prepared to allow that in every instance of aneurism of the thoracic or abdominal aorta, the disease results from the elasticity of the vessel being impaired by structural change, which change produces brittleness to such an extent as to render the artery incapable of having any stretch placed upon it without its living membrane giving way.

As to the exact constitution of an aneurism when once formed, and the relative degree and extent of the implication of the several coats of the vessel, with the distinctions as to true and false, differences of opinion ever have and probably ever will exist; but, for the purposes of treatment, this division is practically of no moment. The artery itself we know to be degenerated from atheromatous deposits to such a degree as to be utterly capable (*per se*) of contributing any great barrier of resistance, and therefore it is to its cellular investment alone that we must attribute the function of constituting the sac in all cases of aneurism of more than a very small size. This external cellular sheath is never affected by atheroma, and its strength, from the interlacement of its fibres, is such as to allow of very considerable force being withstood as the column of blood strikes against it. Still, unaided, it is not sufficient permanently to rest the distension, and this accession of strength we endeavour artificially to supply. Practically, the question to be considered in each individual case is, whether the aneurism is circumscribed or diffused, for in the former only can any treatment avail. If diffused, nothing further can be done than to alleviate

pain ; but, when bounded by a defined and perfect covering, that easing we may hope to strengthen. Once the blood has burst at any point the chamber into which the artery has become dilated, then all hope of interference is gone, and death must necessarily ensue, following exactly in proportion to the syncope produced—rapidly, almost instantaneously, in one instance, slowly and by degrees in another—the rupture of the aneurismal sac differing so completely. In one instance the individual shall be occupied enjoying a meal, when he will scream out suddenly and die. At another, he will cough up a tea-spoonful of blood, then, perhaps, grow gradually faint, have, after a while, two or three stools of large size, containing nothing but blood, get gradually weaker, and pass away. The rupture of the sac of the aneurism may be valvular or direct,—a mere pin-hole or a rent-like laceration. It may burst into one of the natural passages, or into the solid viscera of the chest or belly. It may be extravasated into the sub-peritoneal structures or amongst the muscular tissues. Into one site or other, by routes which it is unnecessary to dilate upon, the fatal termination will assuredly follow, unless we can interpose in time to prevent the laceration of the sac. Now there is but one way by which this can be effected, and that is by “fibrinisation,”—in other words, by the production artificially of that result which, when taking place under the influence of nature, unaided, is termed spontaneous cure ; where the blood leaves upon the inner surface of the sac, in its passage through it, layers of fibrine, by degrees diminishes the cavity of the tumor, and, ultimately, all but fills it up. This deposit which we seek to obtain from the blood, for the obliteration of the cavity, is not any coagulum, but the fibrine which, under the name of polypus, is so frequently met with in the heart after death, extending thence sometimes into the great vessel and formed there during life. When long deposited, this fibrine becomes so intimately connected with the sac, that it is difficult to believe that it is not organised and a product of inflammatory exudation, similar to the warty vegetation which, as lymph, we see so frequently deposited upon the aortic valves. Such, however, is not the case, and the idea put forward by a foreign writer, that lymph exudes from the inside of the sac in the consolidation of an aneurism, and thus occludes the cavity, is totally incorrect. There is no lymph whatever connected with the question. It is not any

vital process, but purely mechanical deposit. Inflammation is not present in any form; and the solid matter that at first lines and ultimately fills the sac is simply the fibrine of the blood.

Sometimes during the progress of cure, the pulsation through the vessel below will be almost lost for a while and then restored, the deposit in the sac at first acting as an obstructant, afterwards becoming consolidated, and allowing the blood to flow past. The final cure of an internal aneurism varies in accordance with the shape of the sac, and in some respects differs from that of the external; thus an internal aneurism of the aorta, if of globular form, springing like an offset from the trunk, will be totally filled up with fibrine, and if cut across will exhibit a section as solid and compact as an onion, whilst if oval-shaped the parietes only will be lined. The subsequent course of this fibrine will also materially differ.

Thus, in external aneurism, *i. e.*, aneurism of the extremities, cured either by ligature or compression, the remaining solid contents of the sac are gradually absorbed, until at length nothing but a kernel-like body, demonstrates the site of the former disease; but in aneurism of the aorta it is different. The fibrine deposited in aneurism of the thoracic or abdominal aorta for protective ends remains persistently, because the transit of blood is not totally arrested, and although the aneurism proper may be filled with fibrine and coagulum, there is still left a passage for the blood.

The size of the heart and the condition of the aortic valves materially influence the condition of an aneurism by the effect which is produced upon the circulation. Thus, when the pulse at the wrist is very strong, and the pulsation in the chest forcible and extensive, with the aortic valves capable of discharging their functions of preventing regurgitation, and the aorta healthy for a great portion of its course, the jet of blood into the sac will be violent and the aneurism difficult to cure; whereas, on the contrary, when the aorta, instead of being healthy, is, in some portion of its arch, dilated into a cavity, with its walls so plated with atheroma as to be passively recipient of the blood, and not capable of transmitting it with force, here cure is comparatively easy. Indeed, so passive does the aorta sometimes become, that the fibrine of the blood will occasionally lodge in the dilated portion of the arch, and deposit itself in layers of varying consistence, in character precisely similar to that found in an aneurism proper.

Thus, in the hope of cure by retardation, the prospect will be greater in a case of enlarged heart, with an atheromatous aorta, than in that where the aorta is healthy; but the termination of life cannot be looked upon as remote in the one case as the other, because the blood vessels in the former are generally diseased, and the prospect of aneurism forming elsewhere considerable.

In practice that which we have to contend against is the distensible action of the heart, the forcible flow of the blood from which has the effect of thinning and destroying the sac. In the carrying out of the treatment by retardation, our whole object therefore is so to modify the circulation as to rob it of its noxious character, and convert it into the medium of cure. This is to be effected by three means scientifically and systematically carried out, viz. —rest, regimen, and remedial agents.

The plans advocated and followed by Valsalva (or such at least as have been put forth as advanced by him) with a view to produce this end, are radically wrong; and the repeated bleedings from the arm performed in certain instances to the extent of reducing the individual to a state that he could hardly get out of his bed, are measures not only unnecessary, but utterly erroneous and false.

Frequently repeated venesection cannot but operate injuriously, and retard recovery rather than promote it: firstly, by removing the fibrine, which is an essential agent in the cure; secondly, by producing a watery state of the blood, when blood rich in the solid ingredients is required; thirdly, by tending to quicken the circulation when it is desirable that it should be rendered slower; and fourthly, by unnecessarily weakening the patient, and inducing an anæmic condition of the system. The starvation, too, recommended by Valsalva, if employed in combination with bleeding, would prevent the possibility of the fibrine, when removed, from being renewed. In the treatment here advocated, on the contrary, we require the health of the individual to be as perfect as possible, and the blood in a highly fibrinised state, for it is from the fibrine of the blood we are to draw the material of repair. Our object is by every possible means to reduce the watery elements, and increase the solid constituents of the blood. We require to diminish the heart's action in volume, but we also need to have its frequency reduced. The quantity of blood in the system must be lessened and the force of

the circulation reduced; but this must be effected through cutting off the supply of fluid and acting upon the exhalents of the skin, the kidneys, and the bowels, and not by taking blood from the arm. We desire to diminish the heart's action in the first place, in order to prevent enlargement of the aneurism; in the second place with a view that the sac (acting under the law of all comparatively empty cavities, to collapse) shall correspondingly contract; and in the third, that the current of blood being reduced to a wave-like form, shall, by continued deposition, first line the cavity, and ultimately fill it up altogether. Fibrinisation is to be effected by maintaining the quality of the blood, and preserving the patient's health; bleeding impoverishes the blood by removing the very source from which we seek the cure, whilst frequent venesection accelerates the action of the heart. For these reasons Valsalva's propositions are ill-conceived. Every object sought for will be attained by the recumbent position, and restricted diet; and bleeding, as suggested by Valsalva, should be utterly eschewed. It may be employed as detailed in Captain ——'s case.

The recumbent position is the main point to be attended to. If this cannot be steadily maintained for a considerable length of time, all other treatment will fail. In the horizontal posture the circulation is tranquillized, and the heart's action becomes regular and slow. Recumbence places that check upon the circulation in internal aneurism, which, in external, can be mechanically produced. How, it may be asked, is this effected? Reference to the last case detailed will explain. This patient, upon admission, had a quick, full, and jerking pulse, beating 104 times per minute. After a few days it fell to 96, but, when standing and in ordinary exercise, it never reduced below. Placed lying horizontally, however, for thirty or forty minutes the pulse fell to 66. Now, working this out arithmetically, we find the result to be as follows:—

The pulse when standing and in ordinary exercise	..	96	per minute.
The pulse after lying horizontally for a while	..	66	„
Difference of pulse caused by position	..	30	beats per minute.
Multiplying 30 beats by 60 minutes	..	60	
		30	
	Gives	1,800	beats per hour.
And multiplying 1,800 beats by 24	..	24	
		7200	
		3600	
Gives no less than	..	43,200	beats per diem.

the aneurismal sac being in the one instance (irrespective of the force of the contractions) filled by the heart in the twenty-four hours, no less than forty-three thousand two hundred times oftener than in the other; or, granting that under ordinary circumstances, the individual affected should rest in bed for twelve hours out of the twenty-four (which we know to be greatly in excess of any ordinary recumbence), it would realize twenty-one thousand six hundred times per day. What remedial agent in the pharmacopœia will, without prejudice to the constitution of the patient, produce this result? The answer is brief: there is none. Recumbence is the secret of cure, but this recumbence must be regularly and steadily maintained. I have mentioned "a considerable length of time." I mean by this expression two months or ten weeks, at least, and this period to be passed without the patient, if possible, sitting even once erect. In carrying out the treatment we require therefore a light, cheerful, and airy room, where by day the patient shall have an opportunity of seeing what is going on; and especial care must be taken that it has a southern aspect; for nothing is more depressing to the spirits of a patient than being immured in a chamber upon which the sun never shines. The next point to be attended to is the bed. It must be of camp form, so that the bowels when acting can be easily relieved by an assistant with the pan, or (if not acting) by the administration of an enema, without disturbing the patient. Yet it must not be too narrow, as the sufferer would otherwise feel cramped and confined, and not sufficiently at ease. Upon the bedstead must be placed two hair mattresses, one upon the other, both full and elastic. Upon these (in proper site to receive the sacrum and hips) a large water cushion properly but not over filled. Upon this a double blanket sown at the corners and sides to the lower mattress, and upon the blanket a fine linen sheet similarly attached, this being done to prevent all wrinkling in the bed and disturbance of the sheet on which the patient's legs and body lie; another linen sheet (folded as after a lithotomy operation) being laid transversely to receive the buttocks, and be drawn from beneath from time to time. Three or four good feather pillows to prop the shoulders and receive the head, together with the over clothes, complete the bed, on which, when once comfortably settled, the individual must be content to lie without changing his position further than to turn from side to side, or occasionally

round upon his face, should such movement give relief to the dorsal pain, as it sometimes will. An urinal and bedpan must be at hand, and an attendant always ready to offer such aid as the patient may require; to read to, converse with, or amuse him. The diet, under ordinary circumstances, must be confined to three meals served at regular intervals, and restricted to the following in kind and in amount,* viz.:—For breakfast, two ounces of white bread and butter, with two ounces of cocoa or milk. For dinner, three ounces of broiled or boiled meat, with three ounces of potatoes or bread, and four ounces of water or light claret. For supper, two ounces of bread and butter, and two ounces of milk or tea, making in the aggregate ten ounces of solid and eight ounces of fluid food in the twenty-four hours, *and no more*. Thirst, if present, (as at first it most probably will be, especially during the summer months) must be met by holding a pebble in the mouth to favour the secretion of saliva, or if procurable, by sucking from time to time a small portion of ice, this diminished quantity of liquid reducing the duty of the heart, and relieving the action of the lungs; the effect upon the blood being at the same time to render it thicker and more fitted for deposit. Nature is thus placed in the most favourable position to work out a cure, and we may in some few cases leave her to perform it without further aid. Such, however, is the exception. Hence, therefore, it is necessary to offer a few remarks upon those remedial agents, from whose employment we may derive assistance during the progress of treatment, for in the majority of cases it will be found that recourse must be had to anodynes, aperients, and tonics, given internally, or used as external applications.

Quietude, and the *most perfect* rest both by night and day, being the prime adjuvants to cure, from anodynes, therefore, we derive the very greatest advantage. As an anodyne, lactucarium (if properly prepared, and to be obtained from a source that can be depended upon) is a very valuable medicine, given either by itself in the form of pill, or combined with lupulin and hyoseyamus, and the following formula for its administration will be found applicable to the different undermentioned conditions. In simple wakefulness

* In some irritable constitutions this restriction in diet will be irksome, and the patient become intolerant and restless. Here, instead of attempting to persist in the withholding of food, the appetite should be indulged *to the satisfying of the patient* (so as to keep him tranquil) *but no more*.

5 grains of lactucarium may be taken at bedtime, and repeated during the night if necessary. When, from the pressure of the aneurism, there is tracheal or bronchial irritation, with cough, then the following combination may be given with relief, viz. :—

Lactucarium, twenty grains ;

Extract of hyoseyamus, ten grains ;

made into six pills—two to be taken at bedtime.

If the swallowing of a pill be difficult and cause distress, as is sometimes the case, then the tincture of lactucarium may be substituted for the extract, thus :

Tincture of lactucarium, ... sixty drops ;

Cherry laurel water, ... forty drops ;

Water, one ounce ;

to be taken alone or with the addition of a drachm of the tincture of hyoseyamus to each draught.

As aperients (under which head I include cathartic medicines generally), there are three from whose use assistance will be derived, and which are sufficient to meet the requirements of almost every case. These are the compound powder of jalap, the compound colocynth pill, and the compound rhubarb and aloetic pill. Of the three, that which is to be preferred in these cases is the compound powder of jalap, its action being peculiarly adapted to reducing the quantity of the circulating fluid, by withdrawing serum from the blood ; at the same time that, by its direct influence, it removes fæculent accumulation from every portion of the intestinal tract. Aperients, however, and more especially purgatives, are not to be resorted to without sufficient reason, or to be employed merely because the habits of the individual as to regularity and frequency in action of the bowels have become altered by the change and reduction in food, and by the quietude of position ; for the usual excitants to peristaltic action, viz., the undigested particles of food, together with that which arises from the motion of the body, both, it must be recollected, have been suddenly removed. The irritating of the intestinal canal by medicine, and stimulating it to expel what is not in it, is most objectionable, and whilst distressing to the patient, hastens the circulation, and interrupts the repose so essential to cure. Obstinate constipation, on the other hand, is not to be permitted, or anything that can produce straining, and the instant that such manifests itself, enemata of tepid

water should be resorted to, to clear away all hardened lumps that may occupy the rectum; whilst gentle hand rubbing should also be employed to promote the action of the large intestine. In cases where the colon is pressed upon by the aneurismal sac, and constipation mechanically produced, as a slight accelerator of the intestinal canal, about two grains of the compound rhubarb pill taken just before the dinner meal, will be found useful, and act well. Occasionally the secretion of urine, in consequence of the reduction in the quantity of fluid, will be very limited in quantity, so much so, indeed, as to leave it highly charged with salts, and thereby induce scalding of the urethra in micturition. Here ten grains of the bicarbonate of potash, dissolved in a table-spoonful of cold water, may be given with a very good effect at intervals.

The principal symptom, however, that we are called upon to meet during the treatment is that of pain, and from this we have more to contend against than aught else. Here we must resort to narcotics, using them freely, both internally and externally, and to such an extent as shall dull and deaden the agony under which the patient occasionally suffers. For this purpose opium must be resorted to in its various forms, and of every preparation that which is to be preferred is the Quakers' black drop, proportioning the dose to the urgency of the case.

If genuine black drop cannot be procured, then Batley's sedative liquor, given in combination with the tartrate of antimony, may be usefully employed in such proportions as the following, viz.,

Batley's sedative liquor, 25 drops;

Mindererus solution (Dublin pharmacopœia), 60 drops;

Solution of tartarised antimony, 20 drops;

mixed with one ounce of cold water; take as a draught as required.

In one instance the smoking of twenty grains of stramonium at bedtime was found to produce a quiet night. This was in a case when the real nature of the disease had been overlooked, and the use of stramonium had been prescribed, and its habit acquired, with a view to the relief of symptoms which were supposed to be of asthmatic origin. Its effects, however, were such as to afford considerable relief, and the result may be borne in mind for trial in cases where other narcotics fail. The use of issues, which, when inserted upon either side of the spine, give, upon their discharging in cases of thoracic and abdominal aneurism, such vast relief, can seldom be

resorted to here, as their presence interferes with the recumbent position, and also necessitates the movement of the patient for their dressing.* Instead of these, belladonna may be employed, and a large plaster of this sedative, spread upon very soft, thick chamois leather, be applied evenly over the surface of the back, the centre of the plaster corresponding to the seat of the severest pain. With reference to issues, however (if they should be adopted in any case), it must be borne in mind that the physical and stethoscopic phenomena consequent upon internal aneurism have disappeared upon the creation of an issue, and the establishment of a free discharge. There has been also relief from pain, and an absence of the *bruit*, stridor, or dysphagia, previously existing. This has occurred more than once, and may do so again, thus creating a doubt in the mind of the practitioner as to the correctness of his diagnosis, and a disbelief that the case has been one of aneurism. Subsequent return of these symptoms, however, will dispel the illusion.

Relief to the dorsal pain will often be given by a change of position, such as turning round and lying upon the face; whilst occasionally the application of a heated smoothing iron, applied over folded brown paper, and laid against the painful portion of the spine, will remove for a while the boring sensation which the patient suffers.

Camphor, æther, and black drop in combination having been tried and failed, chloroform by inhalation may be used; whilst, if nausea and vomiting set in (as will sometimes be the case), a draught containing two drops of creosote, with a grain of quinine, may be given with advantage. There is one other medicine that may be used with much benefit, that is iron—in anæmic cases.

Of the iodide of potassium, given in doses, at first, of five grains three times a day, and gradually increased, I have not had sufficient experience to enable me to offer any decided opinion as to its efficacy in hastening the consolidation of the contents of the sac. The only objection that appears likely to arise from its use is the creation of thirst. Medicines, however, in the treatment by fibrinisation are to be regarded only as adjuvants. The steady adherence to restric-

Another mode by which relief to this pain may be afforded is to place the individual fully under the influence of chloroform, and then blister the most sensitive spot on the back with a heated iron spoon; subsequently dressing the vesicated portion with the muriate of morphia, in doses proportioned to the case.

tion in diet, *and long continued recumbence*, being the main points upon which reliance must be placed; and if these be perseveringly employed, it will be found that internal aneurism is not the hopeless affection which it has hitherto been considered.

The success which has attended upon the treatment of internal aneurism in my own hands, has but to be confirmed by the repetition of a few cases in the practice of others to ensure for it a confidence as general as that which has at length been yielded to the treatment of external aneurism by compression. The validity of the latter, at its first introduction, would hardly be credited by many. They had been taught differently as students, and, as practitioners, could not bring themselves to believe that the mere imposition of a weight; or the placing of the point of the finger upon the femoral artery at the groin for a few hours each day; could by any possibility cure a disease which they had seen met only by an operation which ensured the theatre's being crowded by pupils, and the table surrounded by surgeons. The admission into hospital of a patient with external aneurism, was, in their days, an event that produced sensation amongst the pupils. It is now a matter comparatively disregarded, because the treatment is simple, and unaccompanied by *éclat* or excitement. The result to the patient, however, is far different from that which attached to the ligature, and the statistics of recovery under compression, and security to life and limb, such as was never anticipated for, or enjoyed by the knife.

The observations here laid before the profession, in relation to the cure of internal aneurism, are the result of an experience of several years. They represent in a few pages what might have been extended into "a book;" but I think they will be much more useful to the practitioner condensed into the present form. As such, therefore, I publish them, and dedicate them to my brethren, in the hope and assurance that they will, ere long, be the means of saving many a valuable life.

FINIS.



